

## EMANCIPATION OF THE WATERWAYS.

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Probably no expenditure made by the Government produces a larger return than that for the development of our waterways. They are the lines of least resistance but in a state of nature they are not always available. Their economic possibilities are inestimable, when not obstructed by bars or tolls. By the improvement of the channels connecting the Great Lakes to a depth of 20 feet, not only has the cost of the transportation been greatly reduced but the enormous stimulus given to manufacturers has added largely to the population and wealth of the cities encircling these waters. Thus the rate on a bushel of wheat from Chicago to New York by the Lakes and Erie Canal, in 1866, when the Sault Canal depth was limited to 12 feet, was 29.62 cents, whereas the rate on a 20-foot draught in 1904, was only 4.71 cents, or only about one sixth, thus effecting a saving of 84 per cent. The rail charges between the same terminals were, for the year 1866, 32.79 cents, and in 1904, 11.11 cents showing a reduction of about two thirds in the charges by rail. From these significant figures it appears that while the charges by rail and water had both been greatly reduced, in 1866 the water charge was 90 per cent. of that by rail while in 1904 it was only 42 per cent.

But a still more impressive illustration as to the beneficial effects of this improvement is set forth by the statement made in 1892 by Senator Wm. P. Frye, in presenting his committee report, wherein he said that for the year 1890 "The total expenditure for water improvements of the lakes has amounted to about \$30,000,000, or approximately one fifth of the annual saving effected in transportation. . . . Our waterways have acted as the most powerful regulators of rates. . . . When it is considered that a diminution of one mill per ton on the railroads of the country effects a saving of nearly \$100,000,000 to the shippers in transportation, the value of this restrictive power cannot be overestimated." Had the distinguished Senator added as a recognized fact that such regulation by water does not reduce, but greatly increases the revenues of the

railroads he would but have emphasized the Commercial Paradox, which comparatively few persons appear to recognize.

In 1890 the unit rate by rail was about 9 mills and by the lakes alone was 1.2 so that the computed saving on the tonnage moved by water that year was \$147,027,514. Applying the same method to the tonnage and rates of 1903 it is found that the water rate is about 6.7 mills less than that by rail while the total ton-mileage of the lakes is 28,974,660,408 so that the economy effected for the year 1903 is about \$194,139,206. Attention is directed to another impressive result of the deepening and enlargement of the capacity of the channels, in the greatly increased size, tonnage and economy of operation of the vessels engaged in this traffic. Thus from 1855 to 1883, or during the 26 years when the draught was limited to 12 feet the traffic increased from 106,296 to 2,042,259 registered tons, giving an average increment of 56,918 tons per annum. From 1883 to 1896, when the Weitzel-Lock was in operation, with its 16 feet depth, the annual increment was 935,211 tons and after the opening of the great Poe-Lock in 1896 it immediately expanded to 2,750,000 tons so that the registered tonnage in 1902 reached the unprecedented total of 31,955,582, in the seven months of open navigation. Again the value of land is effected by its earning capacity as measured by the price of its products on the spot and this in turn is a function of the cost reaching the ultimate consumer.

Thus the effects of the cheaper water routes manifests itself most remarkably, as will be seen by reference to the average values of the farm products of the several states as furnished by the Department of Agriculture. From the statistics covering a decade, it is found that the lowest average price for wheat is in Nebraska and that it increases in value as the seaboard is approached. The difference in price between the 50.9 cents per bushel in Nebraska and the 78 cents at New York, 1,214 miles distant, is 27.1 cents per bushel or \$8.94 per ton which gives 7.2 mills for the ton-mile rate which is just the average for the United States, so that the price on the farm in Nebraska is regulated by that at the port of export, less the freight charges.

In Missouri where wheat may be shipped by the Mississippi river to New Orleans from St. Louis, 1,162 miles for 4.88 cents per bushel or \$1.61 per ton the rate becomes only 1.4 mills by water.

If sent to New York by rail, 946 miles, it is 6 mills per ton-mile. In consequence of this possible competition therefore the average price paid to the Missouri farmer is ten cents a bushel higher than that paid in Nebraska and this at 12 bushels to the acre means a net return of \$1.20 per acre on his crop.

Extending this analysis to the cereals of the two adjacent states of Kansas and Nebraska the former having the advantage of greater proximity to the waterways, for the year 1901 it was found that the five cents higher price realized on the wheat crop, gave to Kansas \$4,953,965 greater revenue than her neighbor, while at nine cents more per bushel on corn her advantage was \$5,535,543 and for oats at six cents, it was \$1,039,944, making a total of \$11,530,000 on these three cereals. In the same manner it is found that if Nebraska could have marketed her grain at Kansas prices she would have received \$14,267,000 more, in one year. The total expenditures on the rivers and harbors of the country up to September 19, 1900, is reported to have been \$370,411,124.44, 4 per cent. of which would represent the annual loss to one state due to the absence of water competition.

#### THE POLICY OF OTHER COUNTRIES.

It is not surprising therefore that in the sagacious French Republic which has expended over \$700,000,000 on her internal waterways, which are free of tolls, her economists believe this policy to be fully justified by the indirect returns and the thrift and prosperity of the people incidental thereto.

So too the Dominion of Canada has not hesitated to provide the magnificent sum of \$95,316,910.07 for her system of internal waterways, which have returned only about one eighth of this sum, yet the Government recognizes "that waterways and roadways are essential to the commercial life of the country."

Great Britain has learned from a sad experience that the purchase of 1,138 miles out of a total of 3,906, by the railroads, up to 1883, has so retarded her trade that she is no longer able to compete successfully with her foreign rivals and Parliament had prohibited the further control of the waterways by hostile interests and is returning to the policy of rehabilitating them under corporate management. Moreover it is shown that the 2,768 miles under independent control, in 1898, earned a net profit of \$1,080

per mile while the returns from the 1,138 miles, managed by the railroads, only averaged \$200 per mile. To secure the rights and privileges of an open port the Manchester district contested for enabling legislation for five years at a cost of \$750,000 against the allied interests of the railroads and the port of Liverpool but now that the great work is completed, at a cost of about \$75,000,000 the 13,000 vacant dwellings and factories are filled and as many more have been added to the district, while the interests formerly opposed, on principle, are all doing a much larger business than before.

Belgium, but little larger than Vermont, has 1,300 miles of waterways of which the center is Antwerp. Notwithstanding the fact that the State owns most of the railways it has encouraged the construction of the canals so as to render the transportation "as cheap as possible, that by this means the Belgian manufacturer may be enabled to compete on most advantageous terms with his foreign rivals." During the last 25 years about \$90,000,000 have been spent on ports and canals, so that goods can be carried in 300-ton barges directly from the factory to the ship and by the economies thus effected the manufacturer can underbid his foreign competitor.

Germany is building an extensive system of canals to connect the Rhine with the Vistula, passing through her national capital. Russia is urging a thousand-mile canal to unite the Baltic and Black seas. France is proposing further extensions to her ample facilities and intends making a sea-port of Paris. Austria and Italy are also expending large sums for the benefit of their trade with foreign countries and yet the astute American who is on the alert for the best and most economic administration apparently fails to appreciate the great utilities and possibilities lying almost in a state of nature, at his very doors.

#### POLICY OF THE UNITED STATES.

As evidence it is necessary to refer to the condition of the canals of this country to-day as compared with those of the past century. Massachusetts claims the honor of building the first canal around the falls of the Connecticut in 1792-3 and the first railroad at Quincy in 1827, 34 years later. During this period a large number of canals were incorporated to connect navigable waters, and the discovery of hard coal in Eastern Pennsylvania in 1792 also

stimulated the opening of canal routes to the great cities of the seaboard and for its transportation to the manufactories. Thus the Delaware and Hudson, the Morris and Essex, the Schuylkill Navigation, the Chesapeake and Ohio, the Delaware and Raritan, as well as the James River and Kanawa, the Pennsylvania, the Schuylkill & Susquehanna and the Erie were well under way or completed prior to the advent of railroads; but it soon after became apparent that a railroad constructed by private capital could not conduct a profitable business as a competitor of a free waterway built and operated by public funds, so that a war of extermination began between these interests and it became necessary to purchase or lease the canals to control their tonnage. Instead of enlarging and modernizing them for the interest of the lessees and the public they have in some cases been abandoned and in others only sufficient traffic is carried to maintain the charters. The result of this policy is well illustrated in the history of the State works of Pennsylvania where between 1865 and 1874 some 701 miles of canals, which had cost over \$33,000,000 to build, were abandoned. In a similar way 656 miles of the Ohio canals were obliterated having cost nearly \$11,000,000. New York has been more fortunate in having lost only about 269 miles which cost something over \$10,000,000, but the determined effort now making to prevent the enlargement of the Erie Canal to even 12 feet depth indicates that the active opponents to our waterways are not yet convinced that their best interests are conserved by these great arteries of cheap transportation. The beneficial effects of the cheapest water competition in the country upon railroad interests may be seen along the Great Lakes where the roads skirting their banks are amongst the best revenue producers in the United States. If it were possible to purchase the 90,000 square miles of non-productive water-surface and convert it into arable land the railroad interests would not permit it to be done as it would exterminate the prosperous cities and industries which these waters have created, and ruin the tonnage incidental thereto, yet they persist in obstructing deep water legislation. By the end of 1835 there were about 2,700 miles of canals open and in use and only about 1,000 miles of railroad; in 1889 the canal mileage had fallen to 2,305.2 while the railroad mileage had increased to 157,976 miles and to-day it is not less than 212,000. Of the canal mileage only 40.6 is under the con-

trol of the general Government and 2,264.6 is under State or corporate control. This does not include the 1,078 miles of slack-water river improvement, making in all only about 3,400 miles for the entire internal water-borne commerce of the United States.

What this indifference to the earning capacity of canals means in the cost of wear and tear, for maintenance, may be well exemplified by a comparison of the reports of the United Railroads of New Jersey for the best year of the canal traffic before it was leased by the railroad, and when its traffic reached nearly 4,000,000 tons per annum.

In the reports of the company for the year 1866 it is stated :

The cost of the Camden and Amboy R. R. and its equipment.....	\$10,099,000
The cost of the canal and appurtenances.....	4,381,251
The cost of operating the railroad for the year was.....	3,801,732
The cost of operating the canal for the same period.....	360,513
The net revenues from the railroad were.....	511,162
The net revenues from the canal were.....	933,642

So that the railroad returned a little more than five per cent. while the canal earned nearly twenty-three and the operating expenses were less than one tenth of the former. This financial statement is independent of the general benefit conferred upon the public at large by the lower charge for freight carried.

From the above statements as to the great economic advantages of canals, the neglected condition of our own and the activity shown in foreign countries which are thoroughly alive to their importance, it would seem incredible that this government has failed so frequently to act upon or authorize others to engage in most laudable projects, which call for no appropriations from the general treasury for construction, and that petitions of influential communities and large industrial centers are set aside on the score of economy or for other pretexts so that these most important economies in interstate traffic are prevented from securing legislation for periods varying from ten to twenty or more years. Some of the most worthy projects have been before Congress for nearly a half century and do not appear to be much nearer fruition than when they were first proposed.

THE OHIO RIVER.

The largest manufacturing district in the world, that at Pittsburgh, has been praying Congress for a charter to construct a ship

canal to connect the Ohio river at Beaver with Lake Erie at Ashtabula, so that the congestion of the trade in coal, iron and steel may be raised and the price of these commodities be reduced, but in vain. In this district the annual tonnage now exceeds 86,000,000 which is greater than that of any port in the world, and the great rivers leading to the sea are not yet navigable for boats of even six feet draught. They must wait for floods to float them to the markets. What this means may be best shown by the experience of the season of 1895 when the coal which had been accumulating from April 18 until November 28, seven months, and which amounted to 1,200,000 tons was providentially released by a flood only in time to prevent it being frozen in and a large part of it lost. As it was, the cost of keeping the barges afloat amounted to \$2,000 a day. The value of the plant thus tied up was estimated at \$6,500,000.

Although the improvement of this river has been discussed, surveyed and frequently reported upon, the first dam, that at Davis Island, was not opened until 1885 and since then another, at Beaver, has been completed, twenty-eight miles below. Four above and five below Beaver are under contract, but it is estimated that between Pittsburgh and Cincinnati thirty-seven locks and dams will be required and fourteen more below Cincinnati; all for a six-foot navigation, but already it is found insufficient and nine feet are now required. At this rate it may well be asked when will the 1,000 miles be available? This is all down grade and amongst the cheapest systems in the world — on a six-foot draught the estimated cost is .675 mills per ton-mile and on a nine-foot, .39 mill. The lowest rail movement is believed to be that across the Lake Divide, on the Bessemer and L. E. R. R. where the charge was 1.87 mills in 1901, and 2.10 mills in 1904 — or three times the river rate.

#### THE COASTWISE CANALS AND PRIVATE ENTERPRISE.

Again for more than twenty years urgent demands have been made for the creation of harbors of refuge along the New Jersey coast, where there have been 368 wrecks in ten years, which is recognized as one of the most dangerous on the great bay between Cape Cod and Cape Hatteras, but while several estimates have been submitted for projects costing from three to four millions

each they have been rejected as unworthy of improvement because of the absence of sufficient local commerce, caused by the existing bars which it is desired to remove. The interior coastwise canals have been recommended for about a century, but as yet only a few links have been built and those mainly by private and State aid. Massachusetts, has authorized private companies to open a canal across Cape Cod; New Jersey, across its girdle; Delaware and Maryland through their peninsula; Virginia from the Chesapeake to Albemarle Sound; South Carolina from the Santee to the Cooper rivers twenty-two miles, opened in 1802; and many others. The State of Illinois has authorized the levying of a special tax which has been expended in cutting the Chicago Drainage Canal through the Sag to the Illinois river. Thus past history and present experience point conclusively to the greater efficiency of the policy of constructing local works under local legislation and supervision rather than to attempt to legislate for the entire country, by general appropriations made in Congress where so many other matters of a political nature consume time and prevent action, or where sectional jealousies have operated to restrain important measures. Even at this date there are said to be works recommended for approval aggregating nearly \$500,000,000, in rivers and harbors alone, to meet immediate demands, yet it is extremely difficult to pass a bill for even the most urgent improvements. So that it has recently been deemed necessary to authorize private parties, corporations or municipalities to make their own improvements at their own cost subject to the approval of the plans by the Government, but without authority to charge tolls, or to collect revenues. As this is not a practical, commercial proposition, it has been further amended, in the last act, by giving authority in several special instances to private individuals to open channels and charge tolls, the Government reserving the right to recover control after a period of years.

Thus the pressure for commercial channels which it is beyond the power of the general Government to furnish in a reasonable time, is leading back to the original policy of local control and development of the lines of least resistance for our internal commerce which has done so much to open up the country prior to the destruction of our merchant marine in 1867 when it was the pride of the nation, and mistress of the seas.



If the Government desires to adhere to the policy of expending seventy-five per cent. of its revenues for the war, navy and pension establishments it would seem to be wise to surrender its jurisdiction over the secondary rivers and harbors, to local or State authorities that there may be opportunities afforded for the creation of channels of ample capacity not only for commerce but also for the use of the military and naval arms of the service in case of necessity that they may be operated on safe strategic bases between naval depots. Thus may the waters of the country be emancipated from the shackles which have so seriously retarded their development.